

CLAIMS

1. An automation system for controlling and monitoring devices comprising:

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a plurality of devices to be controlled, each device comprising:

a radio frequency receiver for receiving signals,

a radio frequency transmitter for transmitting signals,

a processor for administering the reception and transmission of signals,

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a first memory adapted to hold a device identifier identifying the device, and

means for providing an output to, or receiving an input from, an appliance

operationally connected to the device,

a first controller comprising:

a radio frequency transmitter for transmitting signals,

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a radio frequency receiver for receiving signals,

a first memory comprising an organized data structure holding device identifiers of devices controlled by the first controller,

a second memory holding a controller identifier identifying the first controller, and

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a processor for administering the reception and transmission of signals and being

adapted to store one or more device identifiers in the first memory, the processor

comprising means for generating a first signal comprising one or more destination

identifiers corresponding to device identifiers of one or more destination devices,

information related to the operation of the appliances connected to said destination

devices, and, if necessary, repeater identifiers corresponding to one or more

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signal repeating devices,

wherein one or more of the plurality of devices are further adapted to act as signal

repeating devices in that the processors of each of said one or more devices comprises

means for, upon reception of a first signal, processing said information in its processor if

one of the one or more destination identifiers corresponds to the device identifier of the

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device, and means for, upon reception of a first signal, transmitting a second signal

holding at least said destination identifiers and said information if one of the one or more

repeater identifiers corresponds to the device identifier of the device.

2. An automation system according to claim 1, wherein all devices are adapted to act as

35 repeaters.

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Sub B1
3. An automation system according to claim 1 or 2, wherein the processors of each of the plurality of devices further comprise means for generating a first signal comprising one or more destination identifiers corresponding to controller or device identifiers of one or more destination controllers or destination devices, information related to the operation of the appliance connected the device, and repeater identifiers corresponding to one or more signal-repeating devices.

Sub C1
4. An automation system according to any of the preceding claims, wherein the first memory of the first controller comprises a routing table indicating, for each device, other devices which can receive and process a signal transmitted by said device.

5. An automation system according to claim 4, wherein the processor of the first controller comprises means for identifying in the routing table device identifiers of devices for repeating a first signal having a predetermined destination identifier, and to include said device identifiers as repeater identifiers in the first signal.

Sub B2
6. An automation system according to any of the preceding claims, wherein one or more of the plurality of devices are further adapted to receive an input from the appliance connected thereto, and wherein the processor of a device is adapted to, in response to the received input, generate and transmit a first signal.

Sub C1
7. An automation system according to claim 6, wherein the received input or data corresponding thereto is comprised in the first signal.

25 8. An automation system according to claim 6, wherein the received input is stored in the first memory of the device.

Sub B3
9. An automation system according to any of claims 1 to 8, wherein the appliance connected to one or more of the plurality of devices is a sensor selected from the group consisting of electromagnetic radiation sensor, luminosity sensor, moisture sensor, movement sensor, temperature sensor, mechanical actuator contact, sound sensor, pressure sensor, electric signal sensor, smoke detector, audio pattern recognizing means, visual pattern recognizing means and molecular composition analyzing means.

Sub 10. An automation system according to claim 9, wherein the sensor measures the impedance of an electric signal, such as the capacitance, such as the resistance, such as the inductance.

Sub 11. An automation system according to any of claims 1 to 5, wherein one or more of the plurality of devices are further adapted to generate an output to the appliance connected thereto in response to a received signal, said output being related to the operational state of the appliance.

10 12. An automation system according to claim 11, wherein the output is electric power, and wherein a device can adjust the output power at a level according to a setting comprised in the received signal.

Sub 13. An automation system according to claims 11 or 12, wherein a device is adapted to prohibit the output in response to a received first set of instructions or a first code or predetermined action provided by the user, and wherein said restriction can only be removed in response to a received second set of instructions or a second code or predetermined action provided by the user.

20 14. An automation system according to claim 13, wherein the first controller is adapted to generate the first and the second set of instructions, and wherein the user is must provide a code or perform a predetermined action in order for the first controller to generate said second set of instructions.

25 15. A method for establishing an RF automation system network for controlling and monitoring devices, said method comprising the steps of:

providing a first controller comprising:

30 a radio frequency transmitter for transmitting signals,
a radio frequency receiver for receiving signals,
a first memory comprising an organized data structure holding device identifiers of devices controlled by the first controller,
a second memory holding a controller identifier identifying the first controller, and
a processor for administering the reception and transmission of signals and being
35 adapted to store one or more device identifiers in the first memory,

providing a plurality of devices to be controlled by the first controller, each device comprising:

a radio frequency receiver for receiving signals,
a radio frequency transmitter for transmitting signals,
5 a processor for administering the reception and transmission of signals,
a first memory adapted to hold a device identifier identifying the device, and
a processor for administering the reception and transmission of signals and being adapted to provide an output to, or receive an input from, an appliance operationally connected to the device,

10 generating a first signal comprising one or more destination identifiers corresponding to identifiers of one or more destination devices or destination controllers, information related to the operation of an appliance connected to a device, and one or more repeater identifiers corresponding to one or more signal repeating devices,

15 transmitting said first signal,

receiving the first signal at one of said plurality of devices,

20 if one of the one or more destination identifiers corresponds to the device identifier of the receiving device, then processing said information in the processor of the device, and

if one of the one or more repeater identifiers correspond to the device identifier of the receiving device, then transmitting a second signal holding at least said one or more
25 destination identifiers and said information.

16. A method according to claim 15, wherein the first signal is transmitted by the first controller, the one or more destination identifiers comprised in the first signal is a device identifier, and the information comprised in the first signal comprises instructions to a
30 processor of the destination device to provide an output to, or receive an input from, the appliance connected to the destination device.

17. A method according to claim 15, wherein the first signal is transmitted by a device and wherein the destination identifier comprised in the first signal is a controller identifier and

wherein the information held by the first signal is related to a state or a reading of the device transmitting the first signal.

Sub B6 5 18. A method according to any of claims 15 to 17, further comprising the step of building a routing table indicating, for each device, other devices which can receive and process a signal transmitted by said device, and storing the routing table in the first memory of the first controller.

10 19. A method according to claim 18, further comprising the steps of identifying device identifiers in the routing table of devices for repeating a first signal having a predetermined destination identifier, and including said device identifiers as repeater identifiers in the first signal.

Sub B7 15 20. A method according to any of claims 15 to 19, further comprising the step of, upon receiving a first or a second signal at a device, generate and transmit an acknowledgement signal having the identifier of the device or controller transmitting the first or second signal as destination identifier.

Sub C1 20 21. A method according to claim 20, wherein the acknowledgement signal comprises a destination identifier and one or more repeater identifiers, the method further comprising the steps of receiving said acknowledgement signal at a device and if one of the one or more repeater identifiers correspond to the device identifier of the receiving device, then transmitting a signal holding said destination identifiers and the acknowledgement.

add C.1